



## Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-443



### Littoral Combat Ship Mission Modules (LCS MM)

As of FY 2017 President's Budget

Defense Acquisition Management  
Information Retrieval  
(DAMIR)

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## Common Acronyms and Abbreviations for MDAP Programs

Acq O&M - Acquisition-Related Operations and Maintenance  
ACAT - Acquisition Category  
ADM - Acquisition Decision Memorandum  
APB - Acquisition Program Baseline  
APPN - Appropriation  
APUC - Average Procurement Unit Cost  
\$B - Billions of Dollars  
BA - Budget Authority/Budget Activity  
Blk - Block  
BY - Base Year  
CAPE - Cost Assessment and Program Evaluation  
CARD - Cost Analysis Requirements Description  
CDD - Capability Development Document  
CLIN - Contract Line Item Number  
CPD - Capability Production Document  
CY - Calendar Year  
DAB - Defense Acquisition Board  
DAE - Defense Acquisition Executive  
DAMIR - Defense Acquisition Management Information Retrieval  
DoD - Department of Defense  
DSN - Defense Switched Network  
EMD - Engineering and Manufacturing Development  
EVM - Earned Value Management  
FOC - Full Operational Capability  
FMS - Foreign Military Sales  
FRP - Full Rate Production  
FY - Fiscal Year  
FYDP - Future Years Defense Program  
ICE - Independent Cost Estimate  
IOC - Initial Operational Capability  
Inc - Increment  
JROC - Joint Requirements Oversight Council  
\$K - Thousands of Dollars  
KPP - Key Performance Parameter  
LRIP - Low Rate Initial Production  
\$M - Millions of Dollars  
MDA - Milestone Decision Authority  
MDAP - Major Defense Acquisition Program  
MILCON - Military Construction  
N/A - Not Applicable  
O&M - Operations and Maintenance  
ORD - Operational Requirements Document  
OSD - Office of the Secretary of Defense  
O&S - Operating and Support  
PAUC - Program Acquisition Unit Cost

PB - President's Budget  
PE - Program Element  
PEO - Program Executive Officer  
PM - Program Manager  
POE - Program Office Estimate  
RDT&E - Research, Development, Test, and Evaluation  
SAR - Selected Acquisition Report  
SCP - Service Cost Position  
TBD - To Be Determined  
TY - Then Year  
UCR - Unit Cost Reporting  
U.S. - United States  
USD(AT&L) - Under Secretary of Defense (Acquisition, Technology and Logistics)

## Program Information

**Program Name**

Littoral Combat Ship Mission Modules (LCS MM)

**DoD Component**

Navy

## Responsible Office

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**Date Assigned:** July 28, 2014

## References

**SAR Baseline (Development Estimate)**

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated November 27, 2013

**Approved APB**

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated November 27, 2013

## Mission and Description

The Littoral Combat Ship (LCS) is a fast, agile, and networked surface combatant optimized for operations close to shore, otherwise known as the littorals. The LCS Mission Modules (MM) provide a modular, focused mission capability to the Combatant Commanders to provide assured access against littoral threats. The primary missions for the LCS include countering littoral mine, submarine, and surface threats to assure maritime access for Joint Forces. The underlying strength of the LCS lies in its innovative design approach and the application of modularity for operational flexibility. Fundamental to this approach is the capability to rapidly install interchangeable mission packages onto the ship.

A mission package consists of mission modules with mission crew and support aircraft. Mission modules combine mission systems (vehicles, sensors, weapons) and support equipment that install into the ship via standard interfaces.

Mission systems are added to the mission module baseline incrementally as they reach a level of maturity necessary for fielding. This approach provides for continuous improvement of warfighting capability through an evolutionary acquisition process. Mission modules' modular capability provides an open architecture environment that enables future rapid insertion of new technologies.

## Executive Summary

The LCS MM Program continues to incrementally field additional capabilities to the Fleet as approved in the budget and in-phase with ship deliveries.

This SAR is based on the current program of record of 64 mission packages. Changes to the LCS/Frigate program of record likely will affect the number of Mine Countermeasures Mission Packages (MCM MP), Surface Warfare Mission Packages (SUW MP), and Anti-Submarine Warfare Mission Packages (ASW MP) to be procured by the LCS MM Program. The Navy is reviewing the numerical distribution of mission packages based on the LCS/Frigate program changes reflected in the PB 2017 submission, and expects to update the mission package quantity profile this year.

### SUW MP:

- Successfully completed Phase 1 of Initial Operational Test & Evaluation (IOT&E) of SUW MP Increment 2 aboard USS Coronado (LCS 4) on September 25, 2015. Phase 2 will take place in Spring 2016.
- Successfully conducted Surface-to-Surface Missile Module Guided Test Vehicle (GTV) -2 test event from December 5-9, 2015. The test evaluated the performance of the launcher and missile system in a littoral environment. This built upon the successful completion of GTV-1 in June 2015.

### MCM MP:

- Technical Evaluation (TECHEVAL) of the Increment 1 MCM MP was completed on August 30, 2015. TECHEVAL is the final developmental test prior to IOT&E. The MCM MP met the majority of its sustained area coverage rate test requirements, but significant reliability issues were noted with the Remote Multi-Mission Vehicle (RMMV) and associated subsystems. The other MCM MP systems evaluated during TECHEVAL, the sonar (AN/AQS-20) and the MH-60R helicopter-borne Airborne Laser Mine Detection System (ALMDS) and the Airborne Mine Neutralization System (AMNS), performed well. Based on TECHEVAL results, the Navy chartered an Independent Review Team (IRT) to assess the Remote Minehunting System (RMS).
- The Navy has elected to delay IOT&E of the Increment 1 MCM MP based on the RMS IRT recommendations. The MCM MP schedule will be updated further as part of the IRT implementation plan.
- The plan for fielding the remainder of the MCM MP systems, including COBRA for Beach Zone Mine Detection, CUSV + mine sweeping (Unmanned Influence Sweep System - UISS) for Influence Minesweeping, and Knifefish for buried/high clutter minehunting remains on schedule, with an acceleration of Knifefish being considered. These systems add capability in other portions of the water column or other portions of the MCM detect-to-engage sequence and are not dependent on RMMV to continue their efforts.

### ASW MP:

- The Navy has canceled plans to conduct testing of the Advanced Development Model in the Pacific theater in FY 2016 due to a Congressional appropriations reduction. The Navy is reviewing other opportunities for testing. While the Congressional reduction increases program risk, it is not anticipated to affect schedule.
- The LCS MM program awarded contracts to three companies in July 2015 for the development and delivery of a weight-reduced Escort Mission Module (EMM). The objective is to reduce weight of the EMM by 15-25%, depending upon the LCS variant, while meeting established performance, reliability, safety, and operability requirements.
- The LCS MM program plans to downselect in 2nd Quarter FY 2016 for delivery and testing of the prototype EMM.

The Assistant Secretary of the Navy for Research, Development and Acquisition (ASN (RD&A)) approved Milestone B for the LCS MM program on January 7, 2014. ASN (RD&A), acting as the MDA, waived the following provisions of Section 2366b of Title 10, United States Code:

1. 2366b(a)(1)(D): That funding is available to execute the product development and production plan under the program, through the period covered by the FYDP submitted during the fiscal year in which the certification is made, consistent with the estimates described in subparagraph (1)(C) for the program, having determined that, but for such a waiver, the Department would be unable to meet critical national security objectives.
2. 2366b(2): That the MDA has received a Preliminary Design Review (PDR) and conducted a formal post-PDR assessment, and certifies on the basis of such assessment that the program demonstrates a high likelihood of accomplishing its intended mission, having determined that, but for such a waiver, the Department would be unable to meet critical national security objectives.

The Department will continue to review the LCS MM program at least annually until the certification components are satisfied.

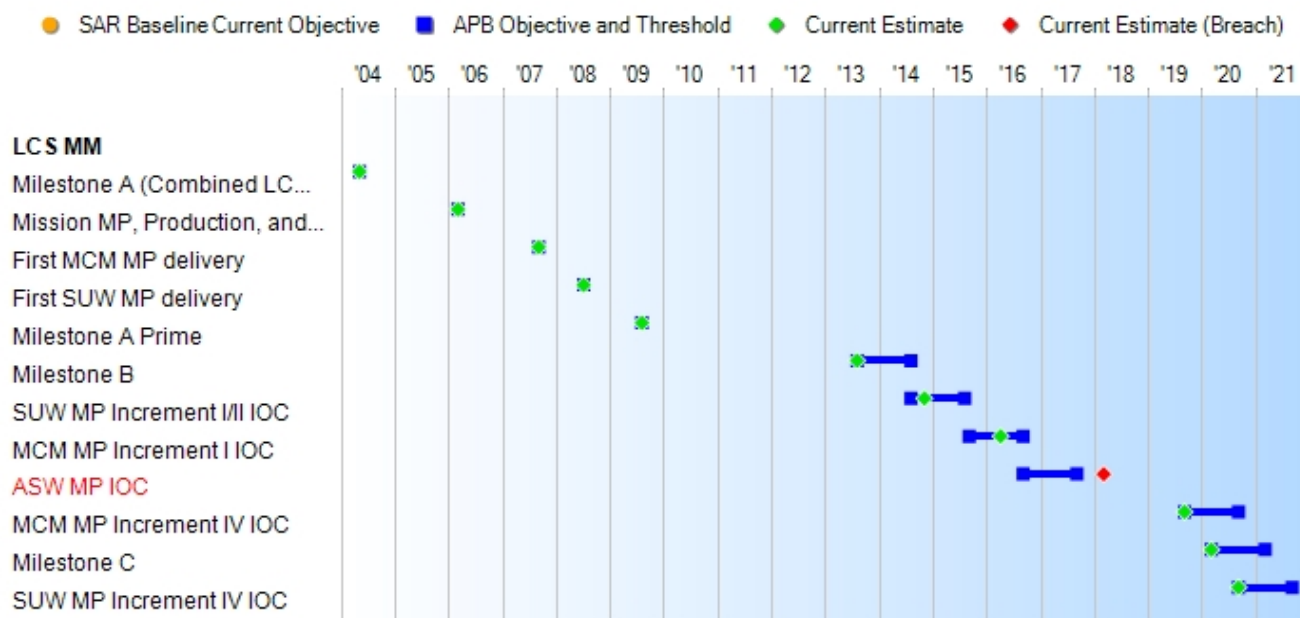
There are no significant software-related issues with this program at this time.



## Threshold Breaches

APB Breaches			Explanation of Breach
<b>Schedule</b>		<input checked="" type="checkbox"/>	IOC for the Anti-Submarine Warfare Mission Package (ASW MP) will be delayed until March 2018 due to the need to balance operational requirements and ship schedules to support deployment of LCS 1-4 and execution of Full Ship Shock Trials on LCS 5 and 6, while aligning the readiness of the weight-reduced Engineering Development Model for at-sea testing with projected ship availability. As a result, shipboard testing will begin in late FY 2017 and Initial Operational Test & Evaluation will occur in FY 2018. This schedule change will still support the Navy's planned first deployment of the ASW MP in FY 2019. The LCS MM program office will continue to coordinate with the LCS ship program and other stakeholders to balance priorities.
<b>Performance</b>		<input type="checkbox"/>	
<b>Cost</b>	RDT&E	<input type="checkbox"/>	
	Procurement	<input type="checkbox"/>	
	MILCON	<input type="checkbox"/>	
	Acq O&M	<input type="checkbox"/>	
<b>O&amp;S Cost</b>		<input type="checkbox"/>	
<b>Unit Cost</b>	PAUC	<input type="checkbox"/>	
	APUC	<input type="checkbox"/>	
Nunn-McCurdy Breaches			
<b>Current UCR Baseline</b>			
	PAUC	None	
	APUC	None	
<b>Original UCR Baseline</b>			
	PAUC	None	
	APUC	None	

## Schedule



Schedule Events				
Events	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate
Milestone A (Combined LCS program)	May 2004	May 2004	May 2004	May 2004
Mission MP, Production, and Assembly contract award	Mar 2006	Mar 2006	Mar 2006	Mar 2006
First MCM MP delivery	Sep 2007	Sep 2007	Sep 2007	Sep 2007
First SUW MP delivery	Jul 2008	Jul 2008	Jul 2008	Jul 2008
Milestone A Prime	Aug 2009	Aug 2009	Aug 2009	Aug 2009
Milestone B	Aug 2013	Aug 2013	Aug 2014	Aug 2013
SUW MP Increment I/II IOC	Aug 2014	Aug 2014	Aug 2015	Nov 2014
MCM MP Increment I IOC	Sep 2015	Sep 2015	Sep 2016	Apr 2016 (Ch-1)
ASW MP IOC	Sep 2016	Sep 2016	Sep 2017	Mar 2018 <sup>1</sup> (Ch-2)
MCM MP Increment IV IOC	Sep 2019	Sep 2019	Sep 2020	Sep 2019
Milestone C	Mar 2020	Mar 2020	Mar 2021	Mar 2020
SUW MP Increment IV IOC	Sep 2020	Sep 2020	Sep 2021	Sep 2020

<sup>1</sup> APB Breach

## Change Explanations

(Ch-1) The current estimate for IOC for the MCM MP has been delayed from September 2015 to April 2016 due to reliability issues noted with the Remote Multi-Mission Vehicle and associated subsystems. The April 2016 date is tentative as the Navy's Independent Review Team is assessing the entire Remote Minehunting System. The Independent Review Team's findings will inform the way ahead for the MCM MP and a new IOC date will be officially established at that time.

(Ch-2) The current estimate for IOC for the ASW MP has been delayed from September 2017 to March 2018 due to the need to balance operational requirements and ship schedules to support deployment of LCS 1-4 and execution of Full Ship Shock Trials on LCS 5 and 6, while aligning the readiness of the weight-reduced Engineering Development Model for at-sea testing with projected ship availability. As a result, shipboard testing will begin in late FY 2017 and IOT&E will occur in FY 2018. This schedule change will still support the Navy's planned first deployment of the ASW MP in FY 2019. The LCS MM Program Office will continue to coordinate with the LCS ship program and other stakeholders to balance priorities.

## Acronyms and Abbreviations

ASW - Anti-Submarine Warfare

IOT&E - Initial Operational Test & Evaluation

MCM - Mine Countermeasures

MP - Mission Package

SUW - Surface Warfare

## Performance

Performance Characteristics				
SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Demonstrated Performance	Current Estimate
MCM MP				
Materiel Availability				
.712	.712	.64	.673	.712
Train to Certify: A trained crew is required for MP Billets / Watch Stations				
Trained-to-Certify at all Team (Watch Section) levels	Trained-to-Certify at all Team (Watch Section) levels	Trained-to-Certify at all Team (Watch Section) levels	TBD	Trained-to-Certify at all Team (Watch Section) levels
SUW MP				
Materiel Availability				
.712	.712	.64	.814	.712
Train-to-Certify: A trained crew is required for MP Billets / Watch Stations				
Trained-to-Certify at all Team (Watch Section) levels	Trained-to-Certify at all Team (Watch Section) levels	Trained-to-Certify at all Team (Watch Section) levels	TBD	Trained-to-Certify at all Team (Watch Section) levels
ASW MP				
Materiel Availability				
.712	.712	.64	TBD	.712
Train-to-Certify: A trained crew is required for MP Billets / Watch Stations				
Trained-to-Certify at all Team (Watch Section) levels	Trained-to-Certify at all Team (Watch Section) levels	Trained-to-Certify at all Team (Watch Section) levels	TBD	Trained-to-Certify at all Team (Watch Section) levels

Classified Performance information is provided in the classified annex to this submission.

### Requirements Reference

LCS Flight 0 Capability Development Document (CDD) dated May 25, 2004 and LCS Flight 0+ CDD dated June 17, 2008

### Change Explanations

None

### Notes

Interoperability Information Exchange Requirement KPP replaced by Net Ready KPP.

No materiel availability projection is available for the ASW MP currently in development.

**Acronyms and Abbreviations**

ASW - Anti-Submarine Warfare  
MCM - Mine Countermeasures  
MP - Mission Package  
SUW - Surface Warfare

## Track to Budget

### RDT&E

Appn	BA	PE	
Navy	1319	04	0603581N
	Project	Name	
	3096	LCS Mission Package Development	(Shared) (Sunk)
	3129	LCS Mission Package Development	(Shared) (Sunk)
Navy	1319	04	0603596N
	Project	Name	
	3129	LCS Mission Package Development	

### Procurement

Appn	BA	PE	
Navy	1507	04	0204230N
	Line Item	Name	
	4221	LCS Module Weapons	
	<b>Notes:</b> For procurement of surface-to-surface missiles for the SUW MP.		
Navy	1810	01	0204230N
	Line Item	Name	
	1600	LCS Common Mission Modules Equipment	
	1601	LCS MCM Mission Modules	
	1602	LCS ASW Mission Modules	
	1603	LCS SUW Mission Modules	
	1605	Remote Minehunting System	

### MILCON

Appn	BA	PE	
Navy	1205	01	0212176N
	Project	Name	
	60201424	LCS Mission Module Readiness Center (MMRC)	

## Cost and Funding

### Cost Summary

Total Acquisition Cost							
Appropriation	BY 2010 \$M			BY 2010 \$M	TY \$M		
	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate	SAR Baseline Development Estimate	Current APB Development Objective	Current Estimate
RDT&E	2233.7	2233.7	2457.1	2343.9	2415.6	2415.6	2513.5
Procurement	4116.7	4116.7	4528.4	3999.5	4995.0	4995.0	5039.5
Flyaway	--	--	--	3999.5	--	--	5039.5
Recurring	--	--	--	3999.5	--	--	5039.5
Non Recurring	--	--	--	0.0	--	--	0.0
Support	--	--	--	0.0	--	--	0.0
Other Support	--	--	--	0.0	--	--	0.0
Initial Spares	--	--	--	0.0	--	--	0.0
MILCON	29.1	29.1	32.0	29.5	37.7	37.7	35.7
Acq O&M	0.0	0.0	--	0.0	0.0	0.0	0.0
Total	6379.5	6379.5	N/A	6372.9	7448.3	7448.3	7588.7

#### Confidence Level

Confidence Level of cost estimate for current APB: 50%

Point estimates scaled to the 50/50 confidence level per the Program Life Cycle Cost Estimate (PLCCE) and Service Cost position (SCP).

Total Quantity			
Quantity	SAR Baseline Development Estimate	Current APB Development	Current Estimate
RDT&E	5	5	5
Procurement	59	59	59
Total	64	64	64

#### Quantity Notes

The LCS MM Program uses Mission Packages (MP) as its quantity unit of measure. A MP consists of mission modules, plus a mission crew detachment and supporting aircraft. This SAR is based on the current program of record of 64 MP. Changes to the LCS/Frigate program of record likely will affect the number of Mine Countermeasures, Surface Warfare (SUW), and Anti-Submarine Warfare MP to be procured by the LCS MM Program. The Navy is reviewing the numerical distribution of mission packages based on the LCS/Frigate program changes reflected in the PB 2017 submission, and expects to update the mission package quantity profile this year.

The program provides funding to other programs for the purpose of procuring Mission Systems (MS). These MS (offboard vehicles, sensors, and weapons) are then combined with common mission modules equipment. For the purposes of Congressional visibility into program execution, the annual PB submission breaks out these MS procurements in detail. Once all MS and support equipment are procured for a given MP type (SUW, ASW, MCM), a MP is counted as a procured end item in the budget.



## Cost and Funding

### Funding Summary

Appropriation Summary									
FY 2017 President's Budget / December 2015 SAR (TY\$ M)									
Appropriation	Prior	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	To Complete	Total
RDT&E	1724.2	203.1	160.1	72.8	54.9	43.2	31.0	224.2	2513.5
Procurement	591.1	178.8	142.2	311.7	328.9	229.5	337.3	2920.0	5039.5
MILCON	0.0	16.2	0.0	0.0	0.0	0.0	19.5	0.0	35.7
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2017 Total	2315.3	398.1	302.3	384.5	383.8	272.7	387.8	3144.2	7588.7
PB 2016 Total	2312.2	447.5	440.0	374.7	379.2	276.0	594.8	2652.6	7477.0
Delta	3.1	-49.4	-137.7	9.8	4.6	-3.3	-207.0	491.6	111.7

Quantity Summary										
FY 2017 President's Budget / December 2015 SAR (TY\$ M)										
Quantity	Undistributed	Prior	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	To Complete	Total
Development	5	0	0	0	0	0	0	0	0	5
Production	0	11	5	3	6	5	4	5	20	59
PB 2017 Total	5	11	5	3	6	5	4	5	20	64
PB 2016 Total	5	11	4	4	5	5	4	6	20	64
Delta	0	0	1	-1	1	0	0	-1	0	0

## Cost and Funding

### Annual Funding By Appropriation

Annual Funding							
1319   RDT&E   Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2004	--	--	--	--	--	--	42.6
2005	--	--	--	--	--	--	81.3
2006	--	--	--	--	--	--	193.5
2007	--	--	--	--	--	--	168.4
2008	--	--	--	--	--	--	105.9
2009	--	--	--	--	--	--	168.1
2010	--	--	--	--	--	--	157.9
2011	--	--	--	--	--	--	80.6
2012	--	--	--	--	--	--	151.0
2013	--	--	--	--	--	--	198.2
2014	--	--	--	--	--	--	204.1
2015	--	--	--	--	--	--	172.6
2016	--	--	--	--	--	--	203.1
2017	--	--	--	--	--	--	160.1
2018	--	--	--	--	--	--	72.8
2019	--	--	--	--	--	--	54.9
2020	--	--	--	--	--	--	43.2
2021	--	--	--	--	--	--	31.0
2022	--	--	--	--	--	--	27.8
2023	--	--	--	--	--	--	23.6
2024	--	--	--	--	--	--	24.2
2025	--	--	--	--	--	--	31.6
2026	--	--	--	--	--	--	37.2
2027	--	--	--	--	--	--	2.1
2028	--	--	--	--	--	--	2.1
2029	--	--	--	--	--	--	2.2
2030	--	--	--	--	--	--	2.2
2031	--	--	--	--	--	--	2.4
2032	--	--	--	--	--	--	2.3
2033	--	--	--	--	--	--	2.1
2034	--	--	--	--	--	--	2.3
2035	--	--	--	--	--	--	2.4
2036	--	--	--	--	--	--	2.8
2037	--	--	--	--	--	--	2.5
2038	--	--	--	--	--	--	2.5

2039	--	--	--	--	--	--	2.6
2040	--	--	--	--	--	--	2.7
2041	--	--	--	--	--	--	3.0
2042	--	--	--	--	--	--	2.8
2043	--	--	--	--	--	--	2.6
2044	--	--	--	--	--	--	3.0
2045	--	--	--	--	--	--	2.7
2046	--	--	--	--	--	--	3.3
2047	--	--	--	--	--	--	2.8
2048	--	--	--	--	--	--	3.2
2049	--	--	--	--	--	--	3.2
2050	--	--	--	--	--	--	3.3
2051	--	--	--	--	--	--	3.2
2052	--	--	--	--	--	--	3.3
2053	--	--	--	--	--	--	3.2
2054	--	--	--	--	--	--	3.5
2055	--	--	--	--	--	--	3.5
Subtotal	5	--	--	--	--	--	2513.5

Annual Funding							
1319   RDT&E   Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	BY 2010 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2004	--	--	--	--	--	--	47.6
2005	--	--	--	--	--	--	88.5
2006	--	--	--	--	--	--	204.4
2007	--	--	--	--	--	--	173.6
2008	--	--	--	--	--	--	107.2
2009	--	--	--	--	--	--	168.0
2010	--	--	--	--	--	--	155.5
2011	--	--	--	--	--	--	77.5
2012	--	--	--	--	--	--	142.9
2013	--	--	--	--	--	--	185.6
2014	--	--	--	--	--	--	188.4
2015	--	--	--	--	--	--	157.3
2016	--	--	--	--	--	--	182.2
2017	--	--	--	--	--	--	141.0
2018	--	--	--	--	--	--	62.9
2019	--	--	--	--	--	--	46.5
2020	--	--	--	--	--	--	35.9
2021	--	--	--	--	--	--	25.2
2022	--	--	--	--	--	--	22.2
2023	--	--	--	--	--	--	18.5
2024	--	--	--	--	--	--	18.6
2025	--	--	--	--	--	--	23.8
2026	--	--	--	--	--	--	27.4
2027	--	--	--	--	--	--	1.5
2028	--	--	--	--	--	--	1.5
2029	--	--	--	--	--	--	1.5
2030	--	--	--	--	--	--	1.5
2031	--	--	--	--	--	--	1.6
2032	--	--	--	--	--	--	1.5
2033	--	--	--	--	--	--	1.3
2034	--	--	--	--	--	--	1.4
2035	--	--	--	--	--	--	1.5
2036	--	--	--	--	--	--	1.7
2037	--	--	--	--	--	--	1.5
2038	--	--	--	--	--	--	1.5
2039	--	--	--	--	--	--	1.5
2040	--	--	--	--	--	--	1.5
2041	--	--	--	--	--	--	1.6
2042	--	--	--	--	--	--	1.5
2043	--	--	--	--	--	--	1.4

2044	--	--	--	--	--	--	1.5
2045	--	--	--	--	--	--	1.4
2046	--	--	--	--	--	--	1.6
2047	--	--	--	--	--	--	1.4
2048	--	--	--	--	--	--	1.5
2049	--	--	--	--	--	--	1.5
2050	--	--	--	--	--	--	1.5
2051	--	--	--	--	--	--	1.4
2052	--	--	--	--	--	--	1.5
2053	--	--	--	--	--	--	1.4
2054	--	--	--	--	--	--	1.5
2055	--	--	--	--	--	--	1.5
Subtotal	5	--	--	--	--	--	2343.9

Only includes RDT&E, Navy costs associated with initial procurement. The LCS MM program will procure five Mission Packages with RDT&E, Navy as training and test assets. RDT&E, Navy costs associated with replacement, attrition, and technology refresh costs are accounted for in O&S per the SCP.

Annual Funding 1507   Procurement   Weapons Procurement, Navy								
Fiscal Year	Quantity	TY \$M						
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program	
2017	--	2.8	--	--	2.8	--	2.8	
2018	--	13.1	--	--	13.1	--	13.1	
2019	--	13.7	--	--	13.7	--	13.7	
2020	--	13.5	--	--	13.5	--	13.5	
2021	--	13.7	--	--	13.7	--	13.7	
2022	--	14.0	--	--	14.0	--	14.0	
2023	--	14.3	--	--	14.3	--	14.3	
2024	--	15.6	--	--	15.6	--	15.6	
2025	--	17.1	--	--	17.1	--	17.1	
Subtotal	--	117.8	--	--	117.8	--	117.8	

Annual Funding 1507   Procurement   Weapons Procurement, Navy								
Fiscal Year	Quantity	BY 2010 \$M						
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program	
2017	--	2.4	--	--	2.4	--	2.4	
2018	--	11.1	--	--	11.1	--	11.1	
2019	--	11.4	--	--	11.4	--	11.4	
2020	--	11.0	--	--	11.0	--	11.0	
2021	--	11.0	--	--	11.0	--	11.0	
2022	--	11.0	--	--	11.0	--	11.0	
2023	--	11.0	--	--	11.0	--	11.0	
2024	--	11.8	--	--	11.8	--	11.8	
2025	--	12.7	--	--	12.7	--	12.7	
Subtotal	--	93.4	--	--	93.4	--	93.4	



Annual Funding 1810   Procurement   Other Procurement, Navy							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2010	2	220.3	--	--	220.3	--	220.3
2011	2	42.6	--	--	42.6	--	42.6
2012	2	67.7	--	--	67.7	--	67.7
2013	3	109.2	--	--	109.2	--	109.2
2014	2	90.3	--	--	90.3	--	90.3
2015	--	61.0	--	--	61.0	--	61.0
2016	5	178.8	--	--	178.8	--	178.8
2017	3	139.4	--	--	139.4	--	139.4
2018	6	298.6	--	--	298.6	--	298.6
2019	5	315.2	--	--	315.2	--	315.2
2020	4	216.0	--	--	216.0	--	216.0
2021	5	323.6	--	--	323.6	--	323.6
2022	6	715.7	--	--	715.7	--	715.7
2023	6	734.0	--	--	734.0	--	734.0
2024	6	600.5	--	--	600.5	--	600.5
2025	2	128.7	--	--	128.7	--	128.7
2026	--	76.3	--	--	76.3	--	76.3
2027	--	78.0	--	--	78.0	--	78.0
2028	--	80.6	--	--	80.6	--	80.6
2029	--	21.9	--	--	21.9	--	21.9
2030	--	21.6	--	--	21.6	--	21.6
2031	--	21.9	--	--	21.9	--	21.9
2032	--	22.7	--	--	22.7	--	22.7
2033	--	22.3	--	--	22.3	--	22.3
2034	--	20.5	--	--	20.5	--	20.5
2035	--	20.1	--	--	20.1	--	20.1
2036	--	20.7	--	--	20.7	--	20.7
2037	--	20.6	--	--	20.6	--	20.6
2038	--	19.9	--	--	19.9	--	19.9
2039	--	20.7	--	--	20.7	--	20.7
2040	--	20.7	--	--	20.7	--	20.7
2041	--	20.8	--	--	20.8	--	20.8
2042	--	20.4	--	--	20.4	--	20.4
2043	--	18.9	--	--	18.9	--	18.9
2044	--	18.7	--	--	18.7	--	18.7
2045	--	18.7	--	--	18.7	--	18.7
2046	--	17.4	--	--	17.4	--	17.4
2047	--	15.6	--	--	15.6	--	15.6
2048	--	14.0	--	--	14.0	--	14.0
2049	--	13.0	--	--	13.0	--	13.0

2050	--	11.2	--	--	11.2	--	11.2
2051	--	9.6	--	--	9.6	--	9.6
2052	--	6.3	--	--	6.3	--	6.3
2053	--	5.5	--	--	5.5	--	5.5
2054	--	1.5	--	--	1.5	--	1.5
Subtotal	59	4921.7	--	--	4921.7	--	4921.7

Annual Funding 1810   Procurement   Other Procurement, Navy							
Fiscal Year	Quantity	BY 2010 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2010	2	213.9	--	--	213.9	--	213.9
2011	2	40.8	--	--	40.8	--	40.8
2012	2	63.8	--	--	63.8	--	63.8
2013	3	101.5	--	--	101.5	--	101.5
2014	2	82.8	--	--	82.8	--	82.8
2015	--	55.2	--	--	55.2	--	55.2
2016	5	159.0	--	--	159.0	--	159.0
2017	3	121.7	--	--	121.7	--	121.7
2018	6	255.6	--	--	255.6	--	255.6
2019	5	264.6	--	--	264.6	--	264.6
2020	4	177.7	--	--	177.7	--	177.7
2021	5	261.1	--	--	261.1	--	261.1
2022	6	566.1	--	--	566.1	--	566.1
2023	6	569.2	--	--	569.2	--	569.2
2024	6	456.5	--	--	456.5	--	456.5
2025	2	95.9	--	--	95.9	--	95.9
2026	--	55.8	--	--	55.8	--	55.8
2027	--	55.9	--	--	55.9	--	55.9
2028	--	56.6	--	--	56.6	--	56.6
2029	--	15.1	--	--	15.1	--	15.1
2030	--	14.6	--	--	14.6	--	14.6
2031	--	14.5	--	--	14.5	--	14.5
2032	--	14.7	--	--	14.7	--	14.7
2033	--	14.2	--	--	14.2	--	14.2
2034	--	12.8	--	--	12.8	--	12.8
2035	--	12.3	--	--	12.3	--	12.3
2036	--	12.4	--	--	12.4	--	12.4
2037	--	12.1	--	--	12.1	--	12.1
2038	--	11.5	--	--	11.5	--	11.5
2039	--	11.7	--	--	11.7	--	11.7
2040	--	11.5	--	--	11.5	--	11.5
2041	--	11.3	--	--	11.3	--	11.3
2042	--	10.9	--	--	10.9	--	10.9
2043	--	9.9	--	--	9.9	--	9.9
2044	--	9.6	--	--	9.6	--	9.6
2045	--	9.4	--	--	9.4	--	9.4
2046	--	8.6	--	--	8.6	--	8.6
2047	--	7.5	--	--	7.5	--	7.5
2048	--	6.6	--	--	6.6	--	6.6
2049	--	6.0	--	--	6.0	--	6.0

2050	--	5.1	--	--	5.1	--	5.1
2051	--	4.3	--	--	4.3	--	4.3
2052	--	2.8	--	--	2.8	--	2.8
2053	--	2.4	--	--	2.4	--	2.4
2054	--	0.6	--	--	0.6	--	0.6
Subtotal	59	3906.1	--	--	3906.1	--	3906.1

Other Procurement, Navy (OP,N) is split into separate PEs/Budget Line Items for Common Equipment, Mine Countermeasures Mission Package (MP) equipment, Surface Warfare MP equipment, Anti-Submarine Warfare MP equipment, the Remote Multi-Mission Vehicles, and spares. These are initial procurement costs only. OP,N costs for replacement mission systems, attrition, technology refresh, and spares are accounted for in O&S. Five MP were procured with RDT&E, Navy.

Cost Quantity Information		
1810   Procurement   Other Procurement, Navy		
Fiscal Year	Quantity	End Item Recurring Flyaway (Aligned With Quantity) BY 2010 \$M
2010	2	230.1
2011	2	57.0
2012	2	80.0
2013	3	125.8
2014	2	99.0
2015	--	--
2016	5	199.5
2017	3	146.0
2018	6	304.2
2019	5	305.1
2020	4	210.1
2021	5	301.6
2022	6	614.7
2023	6	617.8
2024	6	503.1
2025	2	112.1
2026	--	--
2027	--	--
2028	--	--
2029	--	--
2030	--	--
2031	--	--
2032	--	--
2033	--	--
2034	--	--
2035	--	--
2036	--	--
2037	--	--
2038	--	--
2039	--	--
2040	--	--

2041	--	--
2042	--	--
2043	--	--
2044	--	--
2045	--	--
2046	--	--
2047	--	--
2048	--	--
2049	--	--
2050	--	--
2051	--	--
2052	--	--
2053	--	--
2054	--	--
Subtotal	59	3906.1

Annual Funding 1205   MILCON   Military Construction, Navy and Marine Corps		
Fiscal Year	TY \$M	
	Total Program	
	2016	16.2
	2017	--
	2018	--
	2019	--
	2020	--
	2021	19.5
Subtotal		35.7

Annual Funding 1205   MILCON   Military Construction, Navy and Marine Corps		
Fiscal Year	BY 2010 \$M	
	Total Program	
2016		14.1
2017		--
2018		--
2019		--
2020		--
2021		15.4
Subtotal		29.5



The SCP assumed receipt of MILCON funds in FY 2021 for construction of four Mission Module Readiness Centers in various locations. One of the locations will be Mayport, FL. The FY 2016 PB submission moves the funds for the construction of the Mission Module Readiness Center in Mayport, FL to FY 2016. However, the Naval Facilities Command manages, executes, and reports on these funds.

## Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
<b>Approval Date</b>	1/7/2014	1/7/2014
<b>Approved Quantity</b>	27	27
<b>Reference</b>	Milestone B ADM	Milestone B ADM
<b>Start Year</b>	2006	2006
<b>End Year</b>	2018	2019

The Current Total LRIP Quantity is more than 10% of the total production quantity , due to the requirement to have enough mission packages to populate the 24 LCS delivered or under contract through FY 2015, and the units required to support development, testing, and training.

The LRIP quantities authorized at Milestone B were 12 surface warfare, 12 mine countermeasures, and three anti-submarine warfare mission packages. The LRIP decision did not specify a starting or ending FY for LRIP. The dates above are derived from program plans. The program procured the first production mission package in 2006, following written authorization by USD (AT&L), acting in his capacity as the MDA. Under the program's current procurement plan, the program will procure the 27th production mission package in FY 2019.

The MDA also authorized the procurement of up to five developmental mission packages for use as development, test, and training assets. These will consist of up to three surface warfare, one mine countermeasures, and one anti-submarine warfare mission package. The program already has procured the surface warfare and mine countermeasures mission packages using RDT&E, Navy. The program plans to procure the developmental anti-submarine warfare mission package in FY 2016.

**Foreign Military Sales**

None

**Nuclear Costs**

None

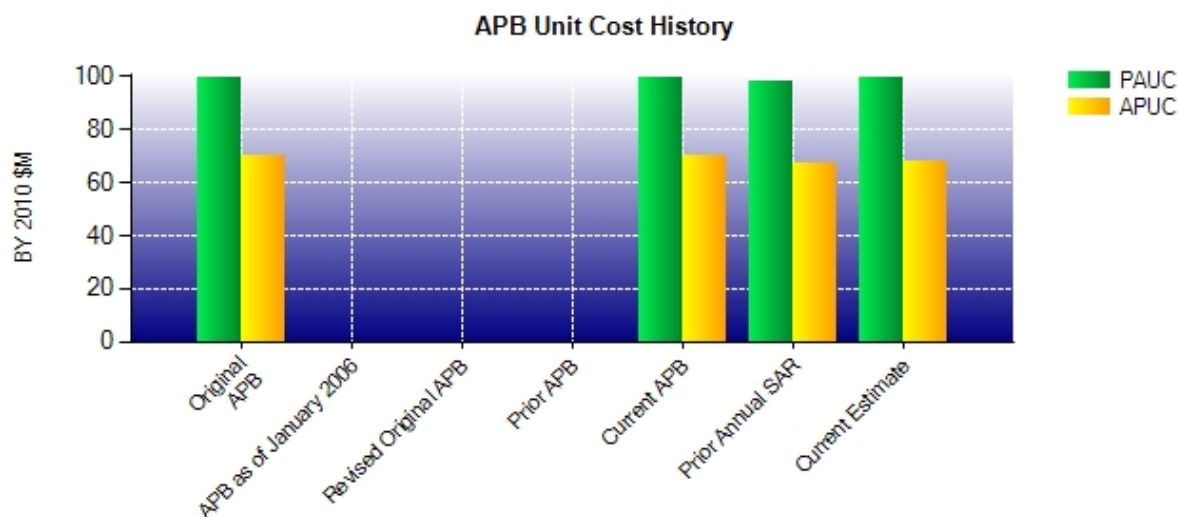
## Unit Cost

### Unit Cost Report

Item	BY 2010 \$M	BY 2010 \$M	% Change
	Current UCR Baseline (Nov 2013 APB)	Current Estimate (Dec 2015 SAR)	
Program Acquisition Unit Cost			
Cost	6379.5	6372.9	
Quantity	64	64	
Unit Cost	99.680	99.577	-0.10
Average Procurement Unit Cost			
Cost	4116.7	3999.5	
Quantity	59	59	
Unit Cost	69.775	67.788	-2.85

Item	BY 2010 \$M	BY 2010 \$M	% Change
	Original UCR Baseline (Nov 2013 APB)	Current Estimate (Dec 2015 SAR)	
Program Acquisition Unit Cost			
Cost	6379.5	6372.9	
Quantity	64	64	
Unit Cost	99.680	99.577	-0.10
Average Procurement Unit Cost			
Cost	4116.7	3999.5	
Quantity	59	59	
Unit Cost	69.775	67.788	-2.85

## Unit Cost History



Item	Date	BY 2010 \$M		TY \$M	
		PAUC	APUC	PAUC	APUC
Original APB	Nov 2013	99.680	69.775	116.380	84.661
APB as of January 2006	N/A	N/A	N/A	N/A	N/A
Revised Original APB	N/A	N/A	N/A	N/A	N/A
Prior APB	N/A	N/A	N/A	N/A	N/A
Current APB	Nov 2013	99.680	69.775	116.380	84.661
Prior Annual SAR	Dec 2014	98.255	67.322	116.828	84.522
Current Estimate	Dec 2015	99.577	67.788	118.573	85.415

## SAR Unit Cost History

Current SAR Baseline to Current Estimate (TY \$M)									
Initial PAUC Development Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
116.380	-2.097	0.000	10.072	-0.344	-5.438	0.000	0.000	2.193	118.573

Current SAR Baseline to Current Estimate (TY \$M)									
Initial APUC Development Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
84.661	-1.805	0.000	10.925	-0.373	-7.993	0.000	0.000	0.754	85.415

SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate
Milestone A	N/A	May 2004	N/A	May 2004
Milestone B	N/A	Aug 2013	N/A	Aug 2013
Milestone C	N/A	Mar 2020	N/A	Mar 2020
IOC	N/A	Aug 2014	N/A	Nov 2014
Total Cost (TY \$M)	N/A	7448.3	N/A	7588.7
Total Quantity	N/A	64	N/A	64
PAUC	N/A	116.380	N/A	118.573

## Cost Variance

Summary TY \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	2415.6	4995.0	37.7	7448.3
Previous Changes				
Economic	-20.4	-70.4	-0.7	-91.5
Quantity	--	--	--	--
Schedule	--	+433.0	--	+433.0
Engineering	--	-22.0	--	-22.0
Estimating	+59.3	-348.8	-1.3	-290.8
Other	--	--	--	--
Support	--	--	--	--
Subtotal	+38.9	-8.2	-2.0	+28.7
Current Changes				
Economic	-6.4	-36.1	-0.2	-42.7
Quantity	--	--	--	--
Schedule	--	+211.6	--	+211.6
Engineering	--	--	--	--
Estimating	+65.4	-122.8	+0.2	-57.2
Other	--	--	--	--
Support	--	--	--	--
Subtotal	+59.0	+52.7	--	+111.7
Total Changes	+97.9	+44.5	-2.0	+140.4
CE - Cost Variance	2513.5	5039.5	35.7	7588.7
CE - Cost & Funding	2513.5	5039.5	35.7	7588.7

Summary BY 2010 \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	2233.7	4116.7	29.1	6379.5
Previous Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	+277.5	--	+277.5
Engineering	--	-18.7	--	-18.7
Estimating	+53.3	-403.5	+0.2	-350.0
Other	--	--	--	--
Support	--	--	--	--
Subtotal	+53.3	-144.7	+0.2	-91.2
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	+147.6	--	+147.6
Engineering	--	--	--	--
Estimating	+56.9	-120.1	+0.2	-63.0
Other	--	--	--	--
Support	--	--	--	--
Subtotal	+56.9	+27.5	+0.2	+84.6
Total Changes	+110.2	-117.2	+0.4	-6.6
CE - Cost Variance	2343.9	3999.5	29.5	6372.9
CE - Cost & Funding	2343.9	3999.5	29.5	6372.9

Previous Estimate: December 2014



RDT&E		\$M	
Current Change Explanations		Base Year	Then Year
Revised escalation indices. (Economic)		N/A	-6.4
FY 2014 adjustments - Below threshold reprogramming to fund Mine Countermeasures (MCM) Mission Package (MP) testing. (Estimating)		+6.8	+7.4
Congressional and Navy budget adjustments. (Estimating)		-13.8	-15.8
Reprogramming of MCM MP funding in FY2017 and FY 2018 from Other Procurement, Navy (OP,N) to RDT&E, Navy to support integration and testing efforts. (Estimating)		+23.8	+27.0
Adjustment to FY 2021 Prior Estimate to align with PB 2017 FYDP controls. (Estimating)		+5.0	+6.2
Fund Train to Qualify / Train to Certify Requirement and MCM MP Increment 3 (Unmanned Influence Sweep System) integration and development. (Estimating)		+32.1	+37.3
Adjustment for current and prior escalation. (Estimating)		+3.0	+3.3
RDT&E Subtotal		+56.9	+59.0

Procurement		\$M	
Current Change Explanations		Base Year	Then Year
Revised escalation indices. (Economic)		N/A	-36.1
Adjustment for current and prior escalation. (Estimating)		+2.5	+2.7
Stretch-out of procurement buy profile from FY 2017 - FY 2027; Mission Module equipment unit cost varies based on mission package types and increments (Navy). (Schedule)		+147.6	+211.6
Congressional and Navy budget adjustments. (Estimating)		+53.1	+87.3
Reprogramming of MCM MP funding in FY 2017 and FY 2018 from Other Procurement, Navy (OP,N) to RDT&E, Navy to support integration and testing efforts. (Estimating)		-23.4	-27.0
Adjustment to FY 2021 Prior Estimate to align with PB 2017 FYDP controls. (Estimating)		-152.5	-189.1
Revised estimate to reflect application of outyear inflation indices (Weapons Procurement, Navy). (Estimating)		+0.2	+3.3
Procurement Subtotal		+27.5	+52.7

MILCON		\$M	
Current Change Explanations		Base Year	Then Year
Revised escalation indices. (Economic)		N/A	-0.2
Adjustment for current and prior escalation. (Estimating)		+0.1	+0.1
Adjustment for current and prior escalation. (Estimating)		+0.1	+0.1
MILCON Subtotal		+0.2	0.0

## Contracts

### Contract Identification

**Appropriation:** Procurement  
**Contract Name:** Mission Package Integrator - PIO CLINs - MCM 7 and SUW 8  
**Contractor:** Northrop Grumman Systems  
**Contractor Location:** 600 Grumman Road West  
 Bethpage, NY 11714  
**Contract Number:** N00024-06-C-6311/2  
**Contract Type:** Cost Plus Fixed Fee (CPFF)  
**Award Date:** December 12, 2014  
**Definitization Date:** December 12, 2014

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
21.6	N/A	2	21.6	N/A	2	21.6	21.2

Contract Variance			
Item	Cost Variance	Schedule Variance	
Cumulative Variances To Date (12/31/2015)		+0.4	-0.1
Previous Cumulative Variances		--	--
Net Change		+0.4	-0.1

### Cost and Schedule Variance Explanations

The favorable cumulative cost variance is due to learning curve effects.

The unfavorable cumulative schedule variance is due to delayed delivery of a gun mission module component from a subcontractor to the prime contractor in October 2015. Early delivery of other gun mission module components have brought schedule variance to near zero.

### Notes

This is the first time this contract is being reported.

Contract N00024-06-C-6311, effort #1 ("Mission Package Integrator - PIO CLINs") concluded in September 2015. This was the production portion of the Northrop Grumman contract awarded in 2006. This effort encompassed procurement of the program's portion of MCM MP #3-6 and SUW MP #3-7, along with miscellaneous equipment and spares.

The program has separated out the production of MCM MP #7 and SUW MP #8 to allow greater visibility into the EVM performance of that procurement. The program is now reporting it as contract N00024-06-C-6311, effort #2 ("MCM 7 and SUW 8").

**Contract Identification**

**Appropriation:** RDT&E  
**Contract Name:** Mission Package Integration Services  
**Contractor:** Northrop Grumman Systems  
**Contractor Location:** 600 Grumman Road West  
 Bethpage, NY 11714  
**Contract Number:** N00024-15-C-6311/0  
**Contract Type:** Cost Plus Fixed Fee (CPFF)  
**Award Date:** August 14, 2015  
**Definitization Date:** August 14, 2015

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
38.5	N/A	0	38.5	N/A	0	38.5	38.5

**Cost and Schedule Variance Explanations**

Cost and Schedule Variance reporting is not required on this (CPFF) contract.

**General Contract Variance Explanation**

Cost and schedule variances are not reported for this contract, because an EVM waiver was granted by Deputy Assistant Secretary of the Navy - Management & Budget on August 10, 2015, due to the contract being for level-of-effort services.

**Notes**

This is the first time this contract is being reported.

Contract N00024-06-C-6311, effort #0 ("Mission Package Integrator - Core Services") concluded in September 2015. It was succeeded by contract N00024-15-C-6311 ("Mission Package Integration Services") in August 2015. This contract is for level-of-effort engineering services.

## Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	4	4	5	80.00%
Production	9	9	59	15.25%
Total Program Quantity Delivered	13	13	64	20.31%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	7588.7	Years Appropriated	13
Expended to Date	2497.8	Percent Years Appropriated	25.00%
Percent Expended	32.91%	Appropriated to Date	2713.4
Total Funding Years	52	Percent Appropriated	35.76%

The above data is current as of December 31, 2015.

## Operating and Support Cost

### Cost Estimate Details

<b>Date of Estimate:</b>	February 06, 2013
<b>Source of Estimate:</b>	SCP
<b>Quantity to Sustain:</b>	64
<b>Unit of Measure:</b>	Mission Package
<b>Service Life per Unit:</b>	30.00 Years
<b>Fiscal Years in Service:</b>	FY 2009 - FY 2055

This SAR is based on the current program of record of 24 Mine Countermeasures (MCM), 24 Surface Warfare (SUW), and 16 Anti-Submarine Warfare (ASW) Mission Packages (MPs). Changes to the LCS/Frigate program of record likely will affect the number of MCM, SUW, and ASW MPs to be procured by the LCS MM Program. The Navy is reviewing the numerical distribution of MPs based on the LCS/Frigate program changes reflected in the PB 2017 submission, and expects to update the MP quantity profile this year. The LCS MM Program plans to update the O&S estimate to reflect new quantities by the end of calendar year 2016.

Each mission package consists of a number of warfare area-specific mission systems, the computing environment and computer programs permanently installed aboard each LCS, any needed aviation assets, and a crew detachment. The collected sensors, weapons, and offboard vehicles for a given warfare area are "mission systems." The LCS MM Program Office combines these mission systems with support containers, support equipment, the Mission Package Computing Environment (MPCE), Mission Package Application Software (MPAS), and the Multiple Vehicle Communication System (MVCS) to create "mission modules (MMs)." The MPCE, MPAS, and MVCS are permanently installed aboard each LCS during construction. At the Mission Package Support Facility (MPSF) or a Mission Module Readiness Center (MMRC), multiple mission modules are combined with any needed aviation assets and the mission package crew detachment to create a "mission package." The mission package is what is embarked on the ship. An example follows:

An SUW MP consists of:

- MPCE/MPAS/MVCS (permanently installed)
- Two Gun Mission Modules: Two 30 millimeter guns, containers, and support equipment
- One Maritime Security Module: Two Rigid Hull Inflatable Boats; Visit, Boarding, Search, and Seizure gear; containers; and support equipment
- One Surface-to-Surface Missile Module: Missiles, launcher, containers, and support equipment
- One Vertical Take-Off Unmanned Aerial Vehicle / Fire Scout
- One MH-60R helicopter
- Crew detachment

### Sustainment Strategy

The Fleet Introduction and Sustainment Program Office, Program Manager, Ship (PMS) 505, is responsible for the sustainment of LCS MMs. The sustainment strategy closely couples the development and production role of the LCS MM Program Office (PMS 420) with that of PMS 505, particularly in the near term. LCS will carry limited onboard resources to maintain and repair mission systems. The assignment of significant maintenance and repair work to a dedicated off-ship, shore-based workforce with significant reliance on distance support is a new approach. Thus, product support of LCS requires a departure from the support approach seen in other surface combatants.

The mission modules will be maintained, stored, and centrally managed through the MPSF. The MPSF will be responsible for providing or coordinating maintenance, technical, and spares support as MMs, mission systems, or other equipment are delivered to and accepted by the MPSF. The MPSF was designed to receive requests from the deployed or embarked mission packages and to translate that into required actions for organic Navy, original equipment manufacturer, or other contractor effort, while maintaining a seamless process and a single interface to Fleet units.

PMS 505, through the MPSF, will coordinate all actions requiring shore-based personnel in support of maintenance and repair actions on an embarked mission package, particularly those that require travel to an Outside Continental United States (OCONUS)-deployed ship. Individual mission system maintenance plans describe specific mission system requirements and tasks to be accomplished to achieve, maintain, or restore operational capability. Maintenance is accomplished by the crew, by the MPSF, by organic Navy resources, or by a contractor, as appropriate. The MPSF will plan, arrange, schedule, coordinate, and manage the execution of all maintenance and modernization tasks. The permanent MPSF workforce will be augmented with government and contractor personnel to handle surge, low volume, and specialized tasks.

In addition to the MPSF, MMRCs will be established at other Continental United States sites and at forward OCONUS locations as deployed operations require. MMRCs are designed to have appropriate maintenance, administrative, and storage capabilities. To support significant maintenance or other events, MMRC staffing may be augmented from the MPSF and/or other Navy or contractor surge forces. MMRCs provide support forces a base for specific operations (e.g., embarkation/debarkation evolutions and major maintenance availabilities).

A hybrid Performance Based Logistics (PBL) system with a Program Support Integrator (PSI) arrangement will be adopted as a near-term solution for early support. The PSI will monitor and report failure of performance against Participating Activity Requirements Manager initiated support contracts requirements, assess existing contractual requirements against needs and experience, and seek alternatives where contractual adjustments are not possible or feasible to improve performance. The PSI will be responsible for data identification and collection and will analyze and correlate hardware and sustainment systems performance. This analysis will help determine which issues demand product improvement, which demand process improvement, what near-term mitigation is possible and affordable, and what long-term solutions are needed and recommended. During the early support phases of the program, PMS 505 will make use of support contracts arranged by mission system program offices, as well as In-Service Engineering Agents and other organic Navy support to provide maintenance, technical, training, and spares support.

PMS 505 will pursue a long-range PBL strategy, with PMS 505 as lead and contractors in a supporting role. PMS 505 has initiated a formal process to transition support from interim support to full MPSF support. This process is designed to ensure that approved logistics products, which are critical to establishing and maintaining mission modules sustainment support, are complete, comprehensive, and current. Ultimately, PMS 505 will ensure that specific plans with firm delivery dates are in place and that approved draft products are available in the interim. Additionally, PMS 505 will ensure that version and configuration control is in place, configuration changes consider logistics impacts, and the costs of updates to applicable products are included in the costs of the change.

#### Antecedent Information

No Antecedent

Annual O&S Costs BY2010 \$M		
Cost Element	LCS MM Average Annual Cost Per Mission Package	No Antecedent (Antecedent)
Unit-Level Manpower	3.210	--
Unit Operations	0.296	--
Maintenance	2.658	--
Sustaining Support	0.484	--
Continuing System Improvements	3.691	--
Indirect Support	0.905	--
Other	0.000	--
Total	11.244	--

Item	Total O&S Cost \$M			
	LCS MM			No Antecedent (Antecedent)
	Current Development APB Objective/Threshold	Current Estimate		
Base Year	21589.2	23748.1	21589.2	N/A
Then Year	33040.2	N/A	33040.2	N/A

#### Equation to Translate Annual Cost to Total Cost

Total Mission Package O&S = unitized cost (Unit Level Manpower + Unit Operations + Maintenance + Sustaining Support + Continuing System Improvements + Indirect Support) x 64 mission packages x 30-year service life per mission package.

The figure provided under the "Continuing System Improvements" cost element includes the projected average annual cost of replacing or refreshing individual mission systems. Generally, individual mission systems within the mission packages have a projected service life of less than 30 years.

O&S Cost Variance		
Category	BY 2010 \$M	Change Explanations
Prior SAR Total O&S Estimates - Dec 2014 SAR	21589.2	
Programmatic/Planning Factors	0.0	
Cost Estimating Methodology	0.0	
Cost Data Update	0.0	
Labor Rate	0.0	
Energy Rate	0.0	
Technical Input	0.0	
Other	0.0	
Total Changes	0.0	
Current Estimate	21589.2	

Disposal Estimate Details

Date of Estimate:	February 06, 2013
Source of Estimate:	SCP
Disposal/Demilitarization Total Cost (BY 2010 \$M):	Total costs for disposal of all Mission Package are 177.8